Caltech Library

"On the fly" collection development to support emergent energy research initiatives

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California Institute of Technology

247th American Chemical Society Meeting
CINF-12
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California Institute of Technology

- AAU member
- ~2200 students, 285 faculty, 600 researchers
- 6 Divisions, ~25 Options
  - Biology & Biological Engineering
  - Chemistry & Chemical Engineering
  - Engineering & Applied Sciences
  - Geology & Planetary Sciences
  - Humanities and Social Sciences
  - Physics, Math and Astronomy

Sherman Fairchild Library

- One of 4 libraries on campus
- Opened in 1997, 24 hours
- Serves all science & engineering disciplines
- 410,000 monographs (~7% electronic)
- 2,100 journals (90% electronic)

Energy & Sustainability Research at Caltech

- Harry Atwater
  - Howard Hughes Professor of Applied Physics & Materials Science
  - Nanophotonic materials
  - Low-cost and ultrahigh-efficiency thin-film photovoltaics
- Harry Gray
  - Arnold O. Beckman Professor of Chemistry
  - Electron-transfer chemistry
  - "The Solar Army" – combinatorial approach to new catalysts
- Sossina Haile
  - Carl F. Braun Professor of Materials Science and of Chemical Engineering
  - Solid state ionic materials and devices
  - New fuel cells based on solid acid electrolytes, improved solid oxide fuel cells

http://www.caltech.edu/content/nanoscale-materials-and-big-solar-energy-interview-harry-atwater
http://www.thesolararmy.org
http://addis.caltech.edu

Joint Center for Artificial Photosynthesis (JCAP)

- Established in 2010 as a DOE Energy Innovation Hub
  - Led by Caltech & LBNL, $122M over 5 years

- Mission: "develop a manufacturable solar-fuels generator, made of Earth-abundant elements, that will use only sunlight, water, and carbon dioxide as inputs and robustly produce fuel from the sun ten times more efficiently than current crops."

- Eight research areas, including:
  - Light Capture and Conversion (Chem, APh, MS)
  - Membrane and Mesoscale Assembly (APh)
  - Scale-Up and Prototyping (Aero, Env. Sci.)

- INOR-465, CATL-84, ENFL-145

http://solarfuelshub.org

Resnick Sustainability Institute (RSI)

- Founded in 2009 with grants from Resnick Family & Moore Foundation, under direction of Harry Atwater
- Fuel production, energy storage, distribution & efficiency, green technology
- Chemistry – environmentally-friendly catalysts for synthesis
- Bioengineering – Novel enzymes via directed evolution
- Materials Science – ultra-light materials, nanopatterning

http://resnick.caltech.edu

Library Support Strategy: Subject Specialization

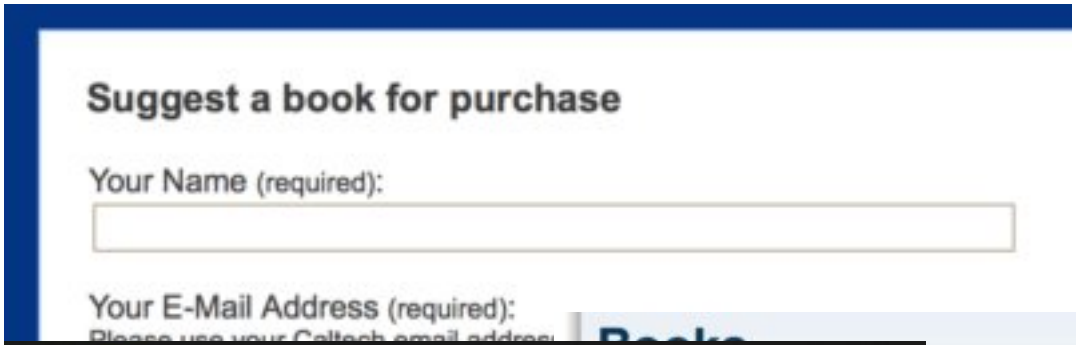
- NOT a comprehensive collection – focus on *current* research & teaching
  - Understand and follow research from faculty (rather than Division/Option) perspective
- Existing collection a good basis
- Good communication between librarians!

- *Challenges with a new area:*
  - Rapid scale-up of both depth & breadth
  - Increase in number of people (and thus requests)
  - Communication of available resources

Databases & Collections Leverage Existing Resources

- Increasing number of monographs, but field is new so journals/databases are main resource
- Subscription
  - Material properties: SciFinder, Reaxys, DIPPR
  - Bibliographic: Web of Science, SciFinder
- Open Access
  - ChemSpider – 28M substances
  - The Materials Project – 49K materials, battery applications
  - Energy Technology Data Exchange (EDTE Web) – energy sources and their environmental/climatic impact

Current Awareness
New Resources

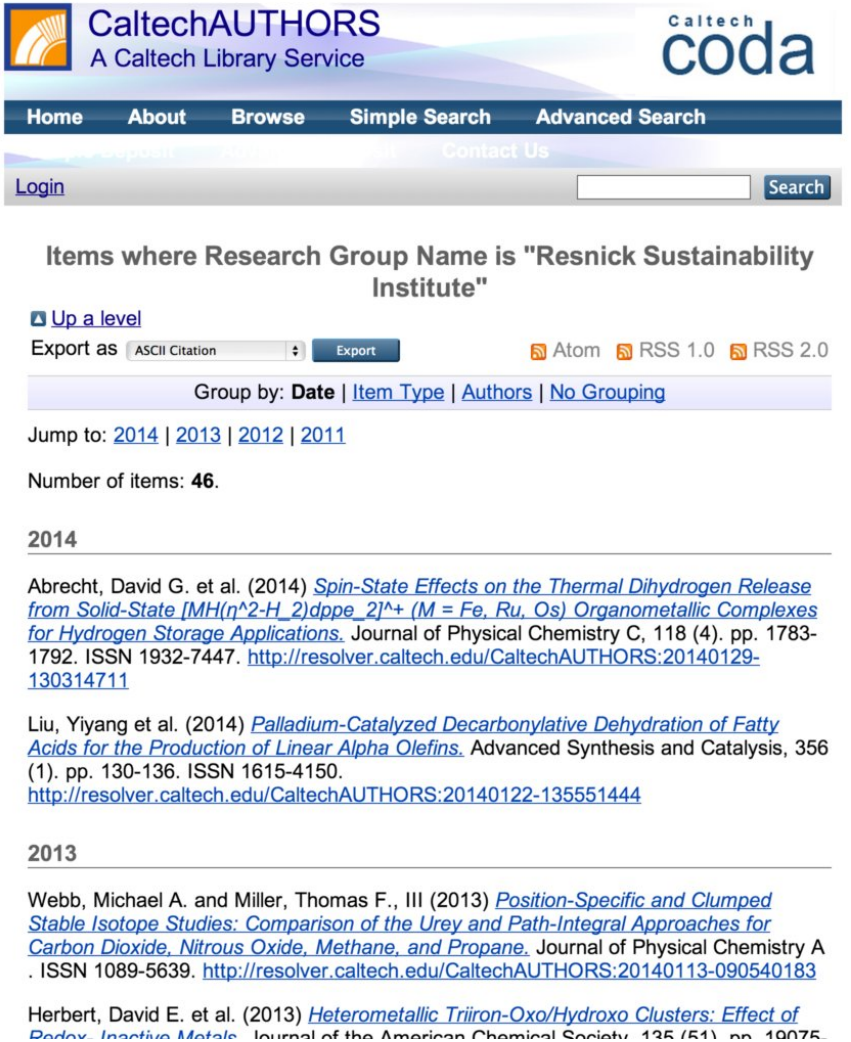


GOBI 3

http://library.caltech.edu
http://www.gobi3.com
http://www.ala.org/acrl/choice/home
http://cen.acs.org/departments/books.html
http://resnick.caltech.edu/lectures.php

Current Awareness: Citation Analysis

- Librarians check faculty citations in Web of Science weekly and add information to to Caltech CODA (Collection of Online Digital Archives)
  - Report errors to Web of Science
- CODA lists used by faculty and campus groups on websites
- Analyze:
  - Publication venues
  - Sources cited



Current Awareness: Citation Analysis - Challenges

- Comprehensive coverage: searching different databases yields different results due to the nature of publications indexed by each and indexing terms used
- Resnick – 46 citations (provided by RSI), only 30 in WoS
  - Of 30 citations, 22 different venues, 19 currently subscribed
- JCAP-related citations:
  - 77 listed on website, not all are Caltech-specific
  - CODA listing would not be comprehensive – would only include work with Caltech-affiliated authors
    - ***i.e. some databases find JCAP in title/abstract, others in author affiliation or address***

Outreach

- Our relationship is with the faculty – we support whatever research they are conducting
  - We make connections and gain information as unobtrusively as possible
- Event attendance, personal connections
- Providing citation lists
- Letting the community know about our resources…

Discoverability

- Catalog – new materials list
- OpenURL resolver in Google Scholar
- Homepage – News
- LibGuides
- Email announcements

Future Considerations

- Funding expiration
- Flexibility in terms of collection

Acknowledgements

- Caltech Library